

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

FORD MOTOR COMPANY,
Petitioner,

v.

PAICE LLC & THE ABELL FOUNDATION, INC.,
Patent Owner.

Case IPR2015-00784
Patent 7,237,634 B2

Before SALLY C. MEDLEY, KALYAN K. DESHPANDE, and
CARL M. DeFRANCO, *Administrative Patent Judges*.

MEDLEY, *Administrative Patent Judge*.

DECISION
Institution of *Inter Partes* Review
37 C.F.R. § 42.108

I. INTRODUCTION

Petitioner, Ford Motor Company, filed a Petition requesting an *inter partes* review of claims 1–3, 5–12, 16, 17, 19, 23, 27, 30, and 66 of U.S. Patent No. 7,237,634 B2 (Ex. 1550, “the ’634 patent”). Paper 1 (“Pet.”). Patent Owner, Paice LLC & The Abell Foundation, Inc., filed a Preliminary Response in both unredacted and redacted forms. Papers 9, 10 (“Prelim.

Resp.”).¹ Patent Owner also filed a Motion to Seal. Paper 11 (“Mot. to Seal.”). We have jurisdiction under 35 U.S.C. § 314(a), which provides that an *inter partes* review may not be instituted “unless . . . the information presented in the petition . . . shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.”

For the reasons that follow, we institute an *inter partes* review of claims 1–3, 6–12, 16, 17, 19, 23, 27, 30, and 66 of the ’634 patent. We do not institute an *inter partes* review of claim 5 of the ’634 patent.

A. Related Proceedings

The ’634 patent is involved in *Paice LLC v. Ford Motor Co.*, No. 1-14-cv-00492, filed on February 19, 2014, in the United States District Court for the District of Maryland. Pet. 2. Petitioner twice filed an earlier Petition for *inter partes* review of the ’634 patent, and we instituted trial in both proceedings. *Ford Motor Co. v. Paice LLC & The Abell Foundation, Inc.*, Case IPR2014-00904 (PTAB Dec. 11, 2014) (Paper 13), and *Ford Motor Co. v. Paice LLC & The Abell Foundation, Inc.*, Case IPR2014-01416 (PTAB Mar. 12, 2015) (Paper 9). Petitioner filed eleven additional petitions, including the instant Petition, challenging various claims of the ’634 patent.²

B. The ’634 Patent (Ex. 1550)

The ’634 patent describes a hybrid vehicle with an internal combustion engine, at least one electric motor, and a battery bank, all

¹ Citations are to the redacted version of Patent Owner’s Preliminary Response (Paper 10, “Prelim. Resp.”).

² See IPR2015-00606 (Paper 10, Appendix), for a complete listing of the eleven cases.

controlled by a microprocessor that directs torque transfer between the engine, the motor, and the drive wheels of the vehicle. Ex. 1550, 17:17–56, Fig. 4. The microprocessor compares the vehicle’s torque requirements and the engine’s torque output against a predefined setpoint and uses the results of the comparison to control the vehicle’s mode of operation, e.g., straight-electric, engine-only, or hybrid. *Id.* at 40:16–49. The microprocessor utilizes a hybrid control strategy that operates the engine only in a range of high fuel efficiency, which occurs when the instantaneous torque required to drive the vehicle, or road load (RL), reaches a setpoint (SP) of approximately 30% of the engine’s maximum torque output (MTO). *Id.* at 20:61–67; *see also id.* at 13:64–65 (“the engine is never operated at less than 30% of MTO, and is thus never operated inefficiently”). Operating the engine in a range above the setpoint but substantially less than the maximum torque output maximizes fuel efficiency and reduces pollutant emissions of the vehicle. *Id.* at 15:55–58.

C. Claims

Petitioner challenges independent claim 1 and dependent claims 2, 3, 5–12, 16, 17, 19, 23, 27, 30, and 66, which depend directly or indirectly from claim 1. Claim 1 is illustrative:

1. A hybrid vehicle, comprising:
 - one or more wheels;
 - an internal combustion engine operable to propel the hybrid vehicle by providing torque to the one or more wheels;
 - a first electric motor coupled to the engine;
 - a second electric motor operable to propel the hybrid vehicle by providing torque to the one or more wheels;
 - a battery coupled to the first and second electric motors,

operable to: provide current to the first and/or the second electric motors; and accept current from the first and second electric motors; and

a controller, operable to control the flow of electrical and mechanical power between the engine, the first and the second electric motors, and the one or more wheels;

wherein the controller is operable to operate the engine when torque required from the engine to propel the hybrid vehicle and/or to drive one or more of the first or the second motors to charge the battery is at least equal to a setpoint (SP) above which the torque produced by the engine is efficiently produced, and wherein the torque produced by the engine when operated at the SP is substantially less than the maximum torque output (MTO) of the engine.

Ex. 1550, 58:2–27.

D. Asserted Grounds of Unpatentability

Petitioner contends that claims 1–3, 5–12, 16, 17, 19, 23, 27, 30, and 66 of the '634 patent are unpatentable under 35 U.S.C. § 103 based on the following specific grounds:

Reference[s]	Basis	Challenged Claim(s)
Ibaraki '882 ³ and the general knowledge of a person of ordinary skill in the art (“POSA”)	§ 103	1–3, 5, 12, 16, 17, 19, 27, 30, and 66
Ibaraki '882, Frank, ⁴ and the general knowledge of a POSA	§ 103	6–11

³ U.S. Patent No. 5,789,882, issued Aug. 4, 1998 (Ex. 1552) (“Ibaraki '882”).

⁴ U.S. Patent No. 6,116,363, issued Sep. 12, 2000 (Ex. 1553) (“Frank”).

Reference[s]	Basis	Challenged Claim(s)
Ibaraki '882, Jurgen, ⁵ Lateur, ⁶ and the general knowledge of a POSA	§ 103	23

II. ANALYSIS

A. Claim Construction

In an *inter partes* review, claim terms in an unexpired patent are given their broadest reasonable construction in light of the specification of the patent in which they appear. 37 C.F.R. § 42.100(b). Under the broadest reasonable construction standard, claim terms are given their ordinary and customary meaning, as would be understood by one of ordinary skill in the art in the context of the entire disclosure. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). Any special definition for a claim term must be set forth with reasonable clarity, deliberateness, and precision. *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994).

Road Load (RL)

The term “road load” or “RL” is recited in each of dependent claims 6, 16, and 23. The Specification of the '634 patent defines “road load” as “the vehicle’s instantaneous torque demands, i.e., that amount of torque required to propel the vehicle at a desired speed,” and further notes that it “can be positive or negative, i.e., when decelerating or descending a hill, in which case the negative road load . . . is usually employed to charge the battery.” Ex. 1550, 12:42–61. Accordingly, we construe “road load” and

⁵ Ronald Jurgen, *Automotive Electronics Handbook*, 1995 (Ex. 1554) (“Jurgen”).

⁶ U.S. Patent No. 5,823,280, issued Oct. 20, 1998 (Ex. 1555) (“Lateur”).

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